

feathers it might well be taken for a distinct species. I have, however, two partially moulted, showing the change from the immature into the adult.

The Tingchow mountains seem to promise a truly golden harvest. As soon as the moulting-season is past I will send to ransack them again.

Amoy, 18th September, 1867.

V.—*Observations on the Egg-beds of Æpyornis*.

By ALFRED GRANDIDIER*.

THE attention of the Academy has been called, on several occasions, by M. Isidore Geoffroy Saint-Hilaire, to a gigantic bird, whose existence had been revealed to him by some eggs of colossal size, and by some fragments of broken bones, sent from the southern part of Madagascar.

It did not then seem impossible to the learned Academician that this bird, to which he gave the name of *Æpyornis*, still lived in the unknown countries of the south of the island; most scientific men have shared his opinion. The latest researches destroy all hope in this respect.

The immense extent comprised between the sea, latitude 20° S., and longitude 44° 30' E. [of Paris], which had hitherto remained unexplored, is a vast arid plateau, of the height of 142 *mètres*, interrupted here and there by clumps of stunted

* [We have to offer our best thanks to M. Grandidier for a copy of this paper, "Observations sur le gisement des œufs de l'*Æpyornis*," communicated to the Academy of Sciences of Paris, and printed in the 'Comptes Rendus' for the past year (vol. lxx. pp. 476-478), as well as to Mr. G. Dawson Rowley for a translation of the same, he having obtained the author's permission to publish it in our pages. So far as we are aware, this paper is the first that has been written on the subject by any one personally acquainted with Madagascar; and hence the knowledge we have possessed respecting the geological formation and the kind of country in which the remains of *Æpyornis maximus* have been found has hitherto been extremely imperfect. M. Grandidier has recently returned to Madagascar to renew his researches there; and we trust that even greater success will attend his future than he has already met with in his past investigations. —ED.]

trees, interspersed with arborescent *Euphorbiaceæ* and "nopals" [*Opuntia*]. This country is little inhabited; it is not, however, altogether a desert, and here and there are found some miserable huts, the abode of the poor wretches who vegetate in these desolate tracts.

On seeing this bare region, which man daily traverses in all parts, there can be no doubt as to the complete disappearance of the *Æpyornis*. The oldest of the Antandrouis have never heard the gigantic bird spoken of; no tradition, contrary to what has been often said, exists amongst them on the subject, as I have convinced myself at many *kabars* or public gatherings. The vast forests of the centre, cut up by paths in every direction, and frequented by the Hovas, no longer permit a hope of hereafter finding there this bird, the existence of which is attested by the numerous remains one daily finds on the south coast of Madagascar; for although entire eggs are rare, fragments are not, and of them I myself was able to collect a tolerable quantity.

The eggs brought to Europe have always been found in the middle of the deposits caused by unusual falls of rain,—the accidental torrents, which bear down the sand with them, leaving the eggs discovered. It is only on the portion of the coast comprised between Cape S. Mary and Machikora, that to my knowledge eggs, or fragments of eggs, have been found; Mananzari, the island of S. Mary, and Port Leven, however, are also spoken of as places where they have been found.

In exploring the neighbourhood of Cape S. Mary I applied myself chiefly to the study of the soil, wherein I found the remains which I lay before the Academy; I have not been fortunate enough, in spite of all my efforts, to procure any bones.

Immense dunes accumulated on the sea-shore rise upon a horizontal limestone. This limestone, which stretches nearly at the water-level to about a hundred *mètres* from the bank, continues under the dunes themselves; of a yellowish white, an irregular texture, sometimes very compact, without fossils, it is here and there hollowed into circular holes, of which some contain a recent breccia, formed of grains of quartz and fragments of shells united by a calcareous cement.

The dunes, which extend on the south coast of Madagascar from longitude $42^{\circ}44'$ to $43^{\circ}25'E.$, are only separated from the sea by a very narrow flat beach, of not more than 3 or 4 *mètres* in breadth, covered with a quartzose sand, plentifully mixed with garnet. These dunes, the slope of which often measures more than 60° , rise to a height of 142 *mètres*; their perfectly rectilinear summit gives them the appearance of fortifications made by the hand of man, rather than the work of the wind. They are composed of the remains of shells, reduced to an impalpable dust, and of very fine grains of quartz. At their base I have collected *Lucina tigerina*, L., and a coral of the genus *Favia*, species belonging to the Indian Ocean; but it is on their slopes that the fragments of the eggs of *Æpyornis* are found, mingled with the remains and moulds of land-shells:—1st. *Bulinus faranii**, Fér.; 2nd and 3rd. *B. affinis* (sp. n.), *B. crassilabris*, Gray, *B. clavator*, Petit, *B. obturatus*, Reeve; 4th. *Helix* (sp. ind.); 5th. *Clyclostoma* (sp. ind.). I have very seldom found organic remains in digging in this deposit or in traversing the higher plateau.

The rains, as well as the winds, carry away only the finest sand, leaving the shells and the fragments of eggs, which they have denuded, gradually to accumulate on the steep slopes; it is in fact in the parts destitute of vegetation, and above all in a little ravine where the waters have left evident traces of their effect, that I have collected the greater part of the organic remains which I have the honour to submit to the inspection of the Academy. The places protected from denudation by the prickly vegetation and the stunted shrubs characteristic of that region, do not present anything like the same abundance of subfossils.

With the shells are sometimes found mixed calcareous stones, still angular, although rolled, in size varying from that of a cannon-ball to that of a bullet; but, abundant as they are on the surface of the higher plateau, and on the slopes sheltered by shrubs, they are somewhat rare on the denuded slopes.

On the top of the dunes, only plains covered with stunted

* This subfossil *Bulinus* has partly preserved its colours. It still lives in the island of Madagascar.

shrubs and "nopals" are to be perceived. Further to the north the prospect is not altered, and the plateau remains as uniform, without the smallest hillock. On this plateau I have not seen any fragment of the eggs of *Apyornis*.

The chain of mountains which run along the coast appears to be all granitic. The strong currents which set round this coast and wash the foot of these mountains, tend daily to restrict the island on this side. Under the protection of this chain, to the south of the central mass and of the secondary formations, thoroughly characterized by a large species of *Nerinaea*, of Trochoid form, whose existence I have recognized in latitude $23^{\circ} 30' S.$, and longitude $42^{\circ} 40' E.$, corals probably grow, as they do at the present time on the south-west coast, and they have formed the base on which is raised the recent formation I have just mentioned.

The daily extension of the west coast is perceptible; the presence of two salt lakes, situated about ten leagues from the coast, from which they are only separated by a plain of sand, and where are found the same fish as in the sea, the immense arid delta which exists between the Kitoumbou and the Manoumbe, the little depth which exists for many miles from the shore, the daily development of the coral-banks—all demonstrate the enlargement of the western region of Madagascar.

Thus, while admitting the actual non-existence of the *Apyornis*, one is obliged to allow that this gigantic bird has lived at an epoch not far distant, seeing that its remains are found in the most modern formations, the continual development of which one still traces at the present day. It may perhaps have existed even at the commencement of our era; but when the country became peopled, it was quickly exterminated, as has been the case with the Moa (*Dinornis gigantea*) &c. of New Zealand.

9 September, 1867.

VI.—*Note on Lanius melanthes, Swinhoe, and on Lanius cephalomelas, Bp.* By Viscount WALDEN.

THE rediscovery in China of the dark and peculiarly coloured Shrike to which Mr. Swinhoe (*Ibis*, 1867, p. 405) has given the